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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,940	11/13/2003	Sharmistha Das	403064-A-01-US (Das)	4800

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EXAMINER	
SINGH, RAMNANDAN P	
ART UNIT	**PAPER NUMBER**
2644	

DATE MAILED: 09/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/713,940	DAS ET AL.	
	Examiner	Art Unit	
	Ramnandan Singh	2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *13 November 2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1-5, 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prabhu et al [US 20020076034 A1] in view of Mercer [US 5,563,952].

Regarding claim 1, Prabhu et al teach a voice detector **(Fig. 11E, Reference 1176)** comprising:

a plurality of Goertzel filters each operating a different frequency within a voice range, some of the filters operating at frequencies of control signals (i.e. **tones)** and others of the filters operating at frequencies other than the control signals' frequencies,

each filter for receiving a signal to be analyzed for presence of voice and detecting energy of the signal at the operating frequency of the filter [Figs. 11A-11E; Para: 0114-0115; 0117; 0119; 0121; 0051-0052; 0108; 0143-0148] and

a comparator (not shown) connected to the filters, for comparing the energies detected by the filters against thresholds and responsive to at least three of the **(parallel)** filters simultaneously detecting energy below a control signal threshold by indicating that the signal comprises voice (i.e. **Fig. 11E, Reference 1177)** [Fig. 2; Para: 0130; 0139-0143; 0127; 0154].

Prabhu et al teach discriminating between a tone and a voice signal. However, in practice, the voice signal may be associated with noise. No details on discriminating between a voice signal and noise are disclosed. So one of ordinary skill in the art would have been motivated to seek any known embodiment providing some criterion to discriminate between voice and noise, such as Mercer.

Mercer teaches distinguishing voice from noise based on a criterion that uses a noise amplitude threshold. When the amplitude of a composite signal containing voice and noise is above a noise threshold, the voice is present in the signal [col. 1, lines 49-61].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply the noise threshold of Mercer with the voice detector of Prabhu

et al to distinguish voice from noise to enable a voice detector to operate successfully in presence of noise [Mercer; col. 1, lines 49-54].

Claim 10 is essentially similar to claim 1 and is rejected for the reasons stated above.

Regarding claim 2, Prabhu et al further teach the voice detector wherein comparator (not shown) is responsive to a filter of the filters operating at a frequency of a control signal (i.e. **tone)** and detecting energy above a control signal threshold by indicating that the analyzed signal comprises the control signal [Fig. 11E; Para: 0127; 0130; 0140-0142; claim 27].

Claim 11 is essentially similar to claim 2 and is rejected for the reasons stated above.

Regarding claim 3, Prabhu et al further teach the voice detector wherein the comparator (not shown) is responsive to one of the filters at a single-frequency control signal (i.e. **single tone**) detecting energy above a first control signal threshold by indicating that the analyzed signal comprises the single-frequency control signal, and is responsive to two of the filters operating at frequencies of a dual-frequency control signal (i.e. **dual tone)** each detecting energy above a second control signal threshold different from the first control signal threshold by indicating that the analyzed signal

comprises the dual-frequency control signal [Par: 0052; 0114; 0118; 0122; 0164; 0166; 0174].

Claim 12 is essentially similar to claim 3 and is rejected for the reasons stated above.

Regarding claim 4, Prabhu et al further teach the voice detector comprising:

a detector (i.e. **AGC**) that detects total energy of the signal to be analyzed [Para: 0113; 0132; 0052; 0118];

wherein the comparator (not shown) is responsive to the total detected energy being below a noise threshold by indicating that the analyzed comprises noise or silence , wherein silence is a typical pattern of voice signals [Mercer: col. 1, lines 49-61; col. 5, lines 44-50].

Claim 13 is essentially similar to claim 4 and is rejected for the reasons stated above.

Regarding claim 5, Prabhu et al further teach the voice detector wherein :

the comparator (not shown) compares the energies detected by the filters against the thresholds by comparing ratios if the energies detected by individual ones of the filters and the total detector energy against the thresholds [Para: 0166; 0174].

Claim 14 is essentially similar to claim 5 and is rejected for the reasons stated above.

3. Claims 6-9, 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prabhu et al [US 20020076034 A1] in view of Mercer [US 5,563,952], and further in view of Felder et al [US 6,608,896 B2].

Regarding claim 6, Prabhu et al teach a call classifier (i.e. **identifying call** progression signals) shown in Fig. 2, comprising:

a plurality of Goertzel filters each operating a different frequency within a voice range, some of the filters operating at frequencies of control signals (i.e. **tones)** and others of the filters operating at frequencies other than the control signals' frequencies, each filter for receiving a signal to be analyzed for presence of voice and detecting energy of the signal at the operating frequency of the filter [Figs. 11A-11E; Para: 0114-0115; 0117; 0119; 0121; 0051-0052; 0108; 0143-0148];

a comparator (not shown) connected to the filters, for comparing the energies detected by the filters against thresholds and responsive to at least three of the **(parallel**) filters simultaneously detecting energy below a control signal threshold by indicating that the signal comprises voice (i.e. **Fig. 11E, Reference 1177)** [Fig. 2; Para: 0130; 0139-0143; 0127; 0154];

the comparator (not shown) is responsive to one of the filters at a single-frequency control signal (i.e. **single tone**) detecting energy above a first control signal

threshold by indicating that the analyzed signal comprises the single-frequency control signal, and is responsive to two of the filters operating at frequencies of a dual-frequency control signal (i.e. **dual tone)** each detecting energy above a second control signal threshold different from the first control signal threshold by indicating that the analyzed signal comprises the dual-frequency control signal [Par: 0052; 0114; 0118; 0122; 0164; 0166; 0174]; and

the comparator (not shown) compares the energies detected by the filters against the thresholds by comparing ratios if the energies detected by individual ones of the filters and the total detector energy against the thresholds [Para: 0166; 0174].

Prabhu et al teach discriminating between a tone and a voice signal. However, in practice, the voice signal may be associated with noise. No details on discriminating between a voice signal and noise are disclosed. So one of ordinary skill in the art would have been motivated to seek any known embodiment providing some criterion to discriminate between voice and noise, such as Mercer.

Mercer teaches distinguishing voice from noise based on a criterion that uses a noise amplitude threshold. When the amplitude of a composite signal containing voice and noise is above a noise threshold, the voice is present in the signal [col. 1, lines 49-61].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply the noise threshold of Mercer with the voice detector of Prabhu et al to distinguish voice from noise to enable a voice detector to operate successfully in presence of noise [Mercer; col. 1, lines 49-54].

Further, Prabhu et al do not teach applying windows for processing data for detecting tone/voice signals. However, this windowing technique is well-known in the art.

Felder et al teach applying windows for detecting DTMF tones using a modified non-uniform DFT [col. 4, lines 21-43; col. 6, lines 5-23; col. 6, line 64 to col. 7, line 39; col. 7, line 54 to col. 8, line 26].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply the windowing technique of Felder et al to the combined system of Prabhu and Mercer in order to ensure that all ITU timing and frequency constraints are met [Felder et al; Abstract].

Claim 15 is essentially similar to claim 6 and is rejected for the reasons stated above.

Regarding claim 7, Felder et al teach the call classifier wherein each window represents a different segment of the signal to be analyzed [col. 4, lines 21-43].

Claim 16 is essentially similar to claim 7 and is rejected for the reasons stated above.

Regarding claim 8, Felder et al teach a call classifier wherein each window represents a different tapered segment of the signal to be analyzed [Fig. 2; col. 4, lines 32-43; col. 8, lines 7-26].

Claim 17 is essentially similar to claim 8 and is rejected for the reasons stated above.

Regarding claim 9, Felder et al teach the call classifier wherein each window represents a different segment of the signal to be analyzed and wherein consecutive windows partly overlap each other [col. 13, lines 18-55; col. 15, lines 27-60].

Claim 18 is essentially similar to claim 9 and is rejected for the reasons stated above.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(i) Drory et al [US 5,321,745] teach identifying a single frequency tone and a dual

frequency tone [];

(ii) Johanson [US 6,381,330 B1] teaches applying Goertzel filters to identify tones; and

(iii) Leong et al [US 6,782,095 B1] teach applying variable windows to minimize computations [Figs. 8a thru 8d; col. 6, line 50 to col. 7, line 13; col. 8, lines 1-42; col. 9, line 43 to col. 10, line 3; col. 18, line 28 to col. 19, line 15].

65. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (703)308-6270. The examiner can normally be reached on M-F(8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester Isen can be reached on (703)-305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

FORESTER W. ISEN
SUPERVISORY PATENT EXAMINER

Ramnandan Singh
Examiner
Art Unit 2644